introduction to
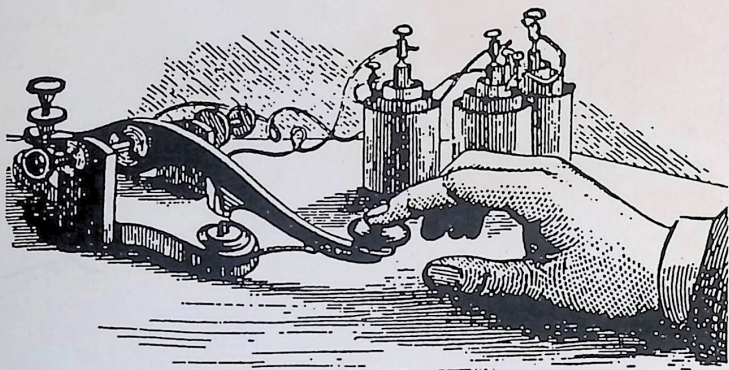
KEY COLLECTING

by Tom French, W1IMQ

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TOM FRENCH, W1IMQ

MAYNARD
MASSACHUSETTS
U.S.A.

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Cover drawing from the QSL card of
Herbert Wischmann, DF9DW
"Erfinder des Morsetelegrafen: Samuel Morse (1791 - 1872)"

3 4 5 6 7 8 9 0

foreword

Welcome to the world of key collecting. Whether you've been in it for a while, or just starting, you are part of a fortunate group of individuals who have happened on a fascinating hobby at the right time.

Keys are still plentiful, competition is low and prices are reasonable. But it won't always be this way. Just as keys have changed over the years, so will key collecting. We are on the point of the curve just before the number of collectors increases rapidly.

These are the golden years, the times when we can decide what we want, be fairly certain of finding it, and improve our collections. We have to be reasonable, of course. One doesn't start collecting keys looking immediately for a Vibroplex Upright and a Melehan Valiant. But interesting, even historically important, collections may be started today. From scratch, and with optimism.

As the collector curve rises, the numbers of keys found by chance will fall. Their appearance at flea markets will be short-lived. The days of getting one from a friend's uncle will have disappeared. The collectible keys and common ones in fine condition will go first, followed by the rest. None will last long under the increasing pressure of numerous collectors.

If you think I've sketched a sad tale of the future of the hobby, you're wrong. We can be a part of that future. Those keys, rescued from cellars and attics, will go onto our shelves and workbenches. Some will be cleaned, repaired and proudly displayed. Others will be safely stored, to be later traded with other collectors.

We will still pursue our hit-or-miss searches for flea market keys, but swapping with fellow collectors will be the efficient way to acquire what we want, and provide what's wanted in return. The hobby will mature, become more organized.

One thing will change: The ease of getting started, of building a unique collection, will become more difficult. So now is the time to begin. Benefit from these days while they last, and you can look forward to the future of this interesting and captivating hobby.

1984 ad shows three of the four based models of Ham-Keys offered between 1975 and 1985. Not shown here is the earlier HK-3; it did not have the anti-tip sub-base. The line was similar to Brown Bros (but there was no Ham-Key bug). In fact, in the later 1970's, Palomar used the HK-2 on their new-style "IC Keyer." Compare the Brown Bros story, page 32.

contents

introduction

The generic name is "telegraph key." It can be a straight key, bug or paddle, or some strange amalgamation of levers and contacts. It could be used in land-line or ocean cable telegraphy, or spark or CW radio work. Whatever it looks like and wherever it's used, if it's operated manually to make and break a circuit to send code, it's called a telegraph key. Or, for short, a key.

Keys have been made and used for almost a hundred and fifty years. In fact, we'll celebrate their sesquicentennial, and that of Morse's first demonstration of telegraphy, in 1994. But only recently, it seems, has the number of people collecting keys seen significant growth.

This growth is evident in the increasing numbers of want-ads placed in magazines like QST or Antique Radio Classified by collectors searching for keys. Other collectors prefer to remain anonymous, haunting the flea markets and quietly adding to their collections. All of them have one thing in common: They've been in the hobby long enough to have gained some experience; they know what they want, what they are likely to find, and what they may have to pay.

But what of the beginner, the person who may have one or two keys and would like to start a real collection? Or the person who has become interested in CW history, and wants a few old keys as illustrative examples? The best advice I've found for any collector comes from noted militaria expert Meng Chi Tsen of Concord, Massachusetts. "You learn by collecting," he said, "but you also learn by studying up on the period before you collect."

For the beginning key collector, though, there is little published material available to help him or her get started. The articles that occasionally appear are helpful, but only if you happen to subscribe to all the right magazines.

That's why I wrote this book. It is, as the title says, an introduction to the hobby. My intent is to give you an idea of what's available and enough information to start collecting intelligently. Armed with this

knowledge, your collecting won't be haphazard. You will have a good idea of what you are looking for, and where to look.

I will also venture to advise you on buying keys. It can be an inexpensive and enjoyable hobby, if you're willing to learn values before spending your cash. A typical error made by the beginner is paying too much for a common key. This not only costs him money, it tends to drive up prices for all of us. I'll suggest ways to avoid that mistake.
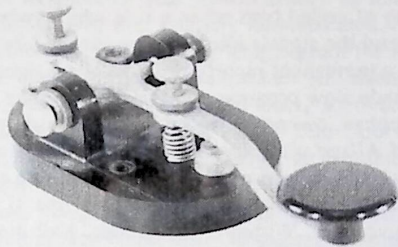
Since most of the scarce, old keys are already in the hands of collectors, this book will concentrate on keys made after 1930, although several earlier keys are included. Both common and rare keys are discussed. Many of the post-WWII keys that are common today will be the stars of tomorrow's collections. Even ordinary keys (like the circa 1959 phenolic frame Johnson Speed-X shown above, for example) are required in specialized collections that achieve to be complete.

As an introduction to the hobby, this book may not answer every question you might have concerning keys. Some answers come only with personal experience. I will have achieved my purposes if this book increases your enjoyment of the hobby, inspires further research, and helps improve your collection.

history of telegraphy

The telegraph was conceived in the United States by Samuel F. B. Morse in the 1830's. It was an invention whose time had come. The scientists Michael Faraday and Joseph Henry had earlier discovered and explained the principles on which such an electromagnetic device could operate. Cooke and Wheatstone in England, and Morse in America, took those discoveries and worked to apply them to a method of long-distance communication (tele = far off; graphein = to write).

By 1837, Morse had progressed to the point where had a crude device consisting of coded type set in a rule which, when drawn along a sender, would send the signals into the wire. At the other end of the line, a register made a permanent record of the received signals.

Morse made slow progress on his device until he met Alfred Vail. Vail's father, Stephen, owned the Speedwell Iron Works near Morristown, New Jersey, and Alfred was experienced in metalwork and construction. Vail managed to build an improved version of Morse's apparatus, and on October 6, 1837, Morse filed a disclosure with the U.S. Patent Office describing his invention. Within a few weeks, Vail discarded the type-rule in favor of a key, and designed a better recording register. To suit the new key and register, a new code was devised.

It is practically certain that Alfred Vail invented the (American) Morse code; an 1858 article by Moses S. Beach, editor of the New York Sun, and an 1869 article by William P. Vail, Alfred's uncle, support this conclusion. E.A. Marland described the invention of the code as "the most important contribution to communication...at that time."

With Vail's inventions and his improvements to Morse's system, it seemed that a viable device was at hand. In March 1838, Vail and Morse formalized their partnership by executing a contract under which Vail would supply money and his services in exchange for a share of the profits in Morse's invention.

Morse tried to patent his telegraph in England, but was thwarted by Cooke and Wheatstone, who had built their own needle-type telegraphs.

He was successful in the United States, though, and patent no. 1647 was granted to Morse on June 20, 1840.

Not mentioned in Morse's original patent disclosure but contained in his patent is a "combination of successive circuits." This refers, of course, to the use of relays for increasing the distance between sender and receiver. While Morse claimed he thought of using relays prior to 1836, it is believed that Henry gave him the idea when they discussed the telegraph in 1839. Whatever the origin, the use of relay circuits would make the telegraph practical over long distances.

The most well-known year in the history of telegraphy is 1844, when Morse's device was first publicly demonstrated. The year before, Congress had authorized Morse's long-sought grant for funds to construct a line between Washington and Baltimore. An attempt to lay wires underground in lead tubes damaged the lines, so overhead wires were used. The transmission of the phrase "What hath God wrought" in both directions on the line removed all doubt as to the usefulness and practicality of the telegraph.

After that, telegraph lines sprang up almost overnight. The operators soon found they could read the messages simply by listening to the click of the relay; the recording registers became superfluous and were abandoned. Replacing them was the sounder, the last of Vail's telegraph inventions. This was not patented, perhaps because of Vail's agreements with Morse, so the date of its introduction is not certain. But with its use, the last element of the classic land-line telegraph system fell into place; these are the key, line, relay and sounder.

This basic system eventually found acceptance in Europe, but with one difference. Their languages contain diacritical marks, like the German umlaut and the French accents, so in 1851 the European countries agreed on a new code. Not only did it provide for diacritical letters, it changed the spaced-element letters (C, O, R, Y, Z) and long-dash L to codes similar to the other letters.

This modification of Morse is called the Continental code; since it is the code used in communication between countries, it is also known as

International Morse. A comparison of the codes (from a WWI Signal Corps field message book with old style Continental punctuation) is shown.

SIGNAL ALPHABETS

(The American Morse Code will be used ONLY on telegraph lines, short cables and field lines.)

Letters	Amn. Morse	Inl. Morse	Letters	Amn. Morse	Inl. Morse	Numerals	Amn. Morse	Inl. Morse
A			N			1		
B			O			2		
C			P			3		
D			Q			4		
E			R			5		
F			S			6		
G			T			7		
H			U			8		
I			V			9		
J			W			0		
K			X					
L			Y					
M			Z					

Punctuation	Amn. Morse	Inl. Morse
Period		
Comma		
Interrogation		
Hyphen		
Dash		
Parenthesis (begin)		
Parenthesis (end)		
Quotation marks (begin)		
Quotation marks (end)		
Dollar mark		
Decimal point	spell "dot"	
Capitalized letter		
Exclamation		
Apostrophe		
Semicolon		
Colon		
Bar indicating fraction		
Underline (begin)		
Underline (end)		
Cross (end of work)		

CONVENTIONAL VISUAL SIGNALS
(EXCEPT SEMAPHORE)

End of word	Interval.
End of sentence	Interval Interval.
End of message	Interval Interval Interval.
Acknowledgement	
Error	
Negative	
Preparatory	
Annulling	
Affirmative	
Interrogatory	
Repeat after (word)	Interrogatory, A. (word)
Repeat last message	Interrogatory, three times
Send faster	QRQ.
Send slower	QRS.
Cease sending	QRT.
Wait a moment	
Move to your right	MR
Move to your left	ML
Move up	MU
Move down	MD
Finished(end of work)	

Communication without wires arrived around 1900. Spark gaps sending damped waves into long antennas wasn't a very efficient way to use the radio spectrum, but in those early days there was plenty of spectrum to go around. As in the beginning of land-line telegraphy, equipment was crude. Keys had to break large currents, spark generators were cumbersome and noisy.

Nevertheless, the Marconi Company established somewhat reliable trans-Atlantic communications in the early 1900's. Their transmitters operated at thousands of meters and hundreds of kilowatts. But long-distance spark communication was a brute-force system at best. Radio Amateurs, running a kilowatt spark rig, dreamt of a contact across the ocean.

Even from the inception of spark it was recognized that undamped, or continuous, waves were much to be preferred. Alexanderson alternators were a step in that direction, but it took the development of the vacuum tube to make the tools of progress widely available. Unfortunately, the use of alternating currents in the antenna circuit of those early radio transmitters didn't offer much improvement to the airwaves.

Some diehard Radio Amateurs stuck with spark, even after Paul Godley travelled to Scotland and demonstrated the superiority of CW in his trans-Atlantic listening test of December 1921. If they weren't convinced by a repeat of the test a year later, the Commerce Department might persuade them. A June, 1923, rule restricted Amateur operation to the type of transmitter described in the license application: CW or spark.

Still, no Amateur had "crossed the pond" with a contact. Godley's tests were all one-way listening. A few spark operators hung in and hoped, but their hopes were dashed on November 27, 1923. The first trans-Atlantic Amateur QSO was made with CW when u1MO and u1XAM worked f8AB in France.

That was convincing. By the time the Federal Radio Commission banned spark in October 1927, no one mourned its passing. They had switched to CW years earlier. The final step to cleaning up the Amateur airwaves was taken in 1930, when the Commission mandated the use of adequately filtered direct current in the plate supply of transmitters.

As with the maturing of land-line telegraphy with the invention of the sounder, all of the elements of modern radiotelegraphy were now in place. In the 1940's, efforts to improve the system would concentrate on the most basic of these elements, the key. This work would result in the rise of the paddle, the fall of the bug, and the emergence of the collector dedicated to preserving an essential part of the history of telegraphy.

an approach to collecting

In the coin collecting world, the special example, the scarce specimen, is called a "key." That's particularly appropriate in this hobby of key collecting. If you collect McElroy, it's the chrome-based Super Speedstream; for Vibroplex, it's the Upright. Come across that "key" at any price, and your resolve weakens as you reach for your wallet.

But key collecting, more than most hobbies, isn't about money. It's about history. The more you know about the keys you collect, the more you will appreciate them.

Some collectors, hearing of the ridiculous prices a special key has sold for, are happy to "collect" the key on paper. They will have a file on it, full of information about when it was made, the market it was designed for, how many were made. If it was patented, a copy will be in the file. They look for an old ad or brochure on the key. Their search is just as diligent as, but much less expensive than, that of the collector who must place the key on his shelf at any price.

Much of what they search for is "ephemera," fliers and announcements not intended to last as long as the keys they promoted. This material is collected, catalogued and preserved for the historical information it contains. Many key collectors, too, will acquire such articles to learn about the keys they have. But some are merely concerned with placing keys on their shelves.

The collectors of information are probably more satisfied. With their knowledge, they "own" the key more profoundly than the collector who has one but knows nothing of its history. They may, of course, hope to find that unusual key at an inexpensive price, and perhaps would buy it in that case. But to satisfy the desire with their wallet is not a part of the game. They have patience.

That's a good approach to key collecting. To do otherwise, to treat the hobby as an investment, is not only a mistake, but poor judgement. A mistake because this hobby is a specialty, and the numbers of collectors the investor counts on to drive prices up will never be as high as those in the coin or antique auto hobbies. And poor judgement, because it is just

that investment-oriented frame of mind that has ruined other hobbies. Collecting old tin advertising signs was once indulged in for fun; today, the deep-pocket dealers and investors have removed much of the enjoyment from this pastime.

The money approach is also what gives the term "collection" an unfortunate implication. Bob Moore noted its "negative connotations" in his book, <u>The Zenith Trans-Oceanic</u>. The word smacks of venal acquisitiveness, a scurrilous hoarding of objects. You will find, if you haven't already, that the price of a key will often rise as soon as the seller learns you are a "collector."

Why, the uninformed seller thinks, would anyone collect something unless it's valuable? And we can't blame him, because that's the situation in too many collecting hobbies. He doesn't know that the value of a key is not inherent, but lies in what it teaches us.

We can avoid, and perhaps eventually correct, that problem if we scorn the overpriced keys and understand that we are primarily collecting knowledge. Obtaining a key isn't an end in itself; what it tells us about the history of communication or the company that made it is at least equally important, and often more fascinating.

If you collect McElroy, you don't "need" the PC-600. If Vibroplex turns you on, you can live without the Upright. The money you save might be better put into fine, less expensive representative examples of the make. And if some day you stumble across an affordable Upright while searching for a pristine Zephyr, your delight will be sweeter for being unexpected.

Study the history of a few different makes. You may surprise yourself and find that the keys that interest you most are not the ones you have, but others that you've previously ignored. They may be common, they may be spurned by "serious" collectors, but if you like them, collect them. Search for the ephemera that will increase your knowledge of those keys; become an expert in them, and help your fellow collectors understand their history.

Approach your collecting that way, and I guarantee you'll enjoy it more. While the number of keys on your shelf may be fewer, it will be a better and more satisfying collection.

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the keys

There are basically four types of keys. These are the well-known straight key (or hand key), the sideswiper, the semi-automatic key (or bug), and the paddle (both single- and dual-lever, used with an electronic keyer). The type of key, and its design, can offer clues to its use and age.

The next four sections describe these key types. There are other kinds of keys, but most are variations of the four types mentioned. You may come across straight keys having an extra set of contacts at the back. Some of these were used for disconnecting a receiver in radiotelegraphy; others may be European-style telegraph keys. You may find double-lever keys, which look like two straight keys side by side. Some early ones were used in cable telegraphy. The ad shows a mid-1920's Cricket finger-key made by F.F. Mace and advertised to Amateurs.
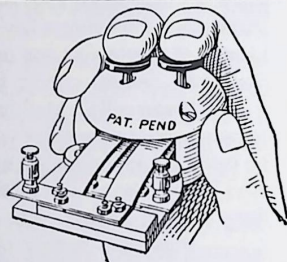
These odd keys and variations of the standard keys are certainly worth collecting, but 98% of your acquisitions will be the standard types mentioned. More likely they will be either straight keys, bugs or paddles, since true sideswipers are fairly scarce.

The sections following those on key types deal with certain models in some depth. This is simply to give you more information on a few of the well-known keys, and on some scarce keys that you may not find but

should be aware of. I don't intended to suggest that makes or models not represented by these sections should be overlooked. You may find others to be equally or more interesting.

Many of the keys you'll find at flea markets are in here. Occasionally you'll come across a key that you can't identify as to manufacturer or model. That's where further study and experience come in. If you become familiar with the models illustrated on these pages, you'll at least be in a position to know what questions to ask about a strange key.

A word on definitions is in order here, because there's some lack of agreement when it comes to identifying the parts of a key. First, we have to start with the pivots, or pivot shaft, on which the lever of the common straight key or bug rotates. This is sometimes called a trunnion, but since even the manufacturers have used the word incorrectly (and occasionally misspelled it), I'll try to avoid it. The pivots are held by bearings, which are usually adjustable screws.

Much confusion surrounds the frame and base of the simple straight key. The frame of a key, as defined by most knowledgeable collectors, is the part that holds the pivot screws. That's the way I'll use the term, even though Nye, for example, refers to it as a base. If you call this part the base, what will you call the piece that the key is mounted on?

The base is that part of the key that rests on the desk and provides weight or stability. Spark keys are almost always assembled on a base, and all bugs and paddles have a base. (The Brown Bros UTL is no exception; the user must provide a base.)

Many telegraph-style straight keys do not come with a base; one must be provided by the operator or the key must be attached directly to the operating desk. Modern straight keys have holes for screws in the frame. Some old telegraph keys have bolts attached to the frame; these are called "leg keys."

With these definitions in mind, there should be no misunderstanding if I say, for example, that a J-38 has a metal frame and is mounted on a dielectric base. You will also know which part I'm referring to when I say that a bug has a one-piece frame or an assembled frame.

Now, on to the keys.

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straight keys

The straight key, also commonly called a hand key, is a simple on-off switch operated by depressing the lever. From the beginning of telegraphy in 1844 to the prevalence of CW in the mid-1920's, straight keys underwent significant changes. In case you come across an old straight key, the dates to keep in mind are 1848, 1869, 1881, 1900 (spark radio) and 1923 (CW radio).

There is much overlap, since older styles would continue for some years alongside the new style. The earliest straight-lever style keys, for example, were around until 1860, even though the camelback design appeared in 1848.
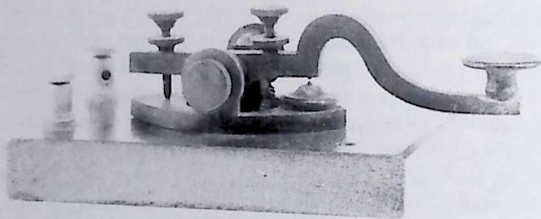
The lever in the camelback key curved upward from about the pivot then downward to the knob, resembling the hump on a camel. These are beautiful keys. The hump is technically unnecessary, of course, and perhaps for that reason these keys appear graceful. Camelbacks were generally gone by 1875.

The picture on the opposite page shows a camelback key by C. Williams Jr of Boston. The design was originated by George Phelps of Western Union, and finally incorporates a spring-tension adjustment.

In 1869 a new style appeared without the exaggerated hump, form giving way to function. The lever dipped down to the knob, and the unessential vertical rise in the lever was gone. The pivot was still a steel pin through the brass lever. Although it's an old design, the beginning collector must be alert. This style would be offered by several companies well into the 20th century, where a heavy-duty key was desired. Nye offers one even today (model 320-001).

The straight keys described so far are still land-line telegraph keys, and the final change came in 1881 when the one-piece steel lever appeared. Many of today's modern radiotelegraph keys differ only slightly from the 1881 Bunnell steel-lever leg key shown below.
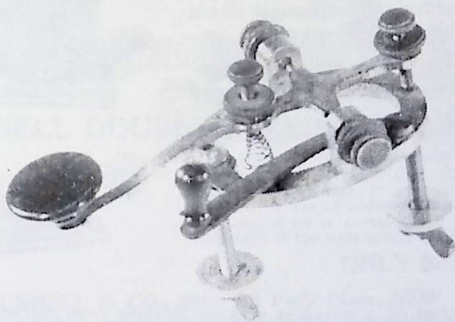
Spark radio appeared in 1900, and required keys with huge contacts. The currents to be broken were large. Some keys had contacts the size of dimes; some were air or oil cooled. The keys themselves were massive. Many were mounted on insulating slate bases. But by 1910, with

the use of relays to reduce the switching requirements, the contacts became smaller, although not as small as those on telegraph keys.

After 20 short years, CW was replacing spark, with its need for heavy keys with big contacts. By 1923, CW was well-established. Light, small-contact keys, like those used in wire telegraphy, were sufficient for the low CW contact currents. Some keys with larger contacts (1/8" and more) continued to be popular.

The key below is by Signal Electric Manufacturing Company. This late 1930's laquered brass key with Navy-type knob could be ordered in three contact sizes. The one shown (type R-64, code SEMCW) has 3/8" contacts, the largest available. The rounded rectangular shape of the frame was popular with many manufacturers.
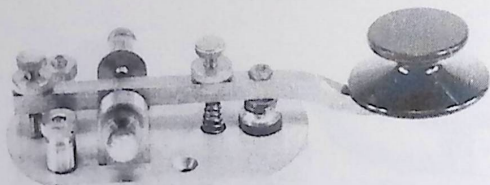
The number of companies making straight keys dwindled starting in the 1940's; thirty years later there were only three or four left in this country. If you want to buy a new straight key today, you'll have to look at the Nye Speed-X line.

But straight keys are still popular. They are simple and inexpensive. They are also easy to adjust and highly portable. For these reasons, straight keys will probably always be with us.

sideswipers

The sideswiper appeared in the late 1880's, when it was found that sideways movements of the fingers were much less fatiguing.

This key is a simple paddle that closes the circuit when the lever is moved either to the right or the left. In operation, the operator usually moves the lever in alternating directions to manually generate successive code elements, regardless of whether it's a dot or a dash.

The "Double Speed" key shown in this 1926 Bunnell ad is a sideswiper. The other is the famous "Gold Bug," well known to (even if not owned by) experienced collectors. The ad favors the bug, since the popularity of sideswipers had died years before, when the semi-automatic key was introduced.

bugs

The semi-automatic key, commonly called a bug or speed key, was invented by Horace Martin in the early 1900's. This was an improvement over the sideswiper, in that by holding the paddle to the right, a string of dots were generated. Dashes were made with each press of the lever to the left. Martin's first semi-automatic was called the Autoplex, and used batteries and electromagnets. His famous improvement, a mechanical bug patented in 1904, was the called the Vibroplex.

Once Martin showed the way, numerous manufacturers came out with bugs. While a few of the early ones were based on unique designs, most were "bootleg bugs" that infringed Martin's patents. When Martin's basic patents expired, many makes and models became available; this cut from a 1934 Gross Radio ad shows a "Go-Devil" by A.H. Emery. But today the Vibroplex Company is the only U.S. manufacturer of bugs.

Vertical bugs were only made from about 1906 to 1925. These bugs had their pendulums mounted upright. The new design allowed other keys such as the Mecograph to avoid Martin's basic bug patents; Vibroplex saw some value in the design, and claimed its Upright model took less space on a telegraph operator's desk.

Bugs were made for telegraph work. Their design requires a relatively small contact on the vibrating dot contact, since a large contact with heavy operating pressures would work against the pendulum mainspring. For this reason, bugs could not be used for early spark work, and were only later used to control spark transmitters through a relay.

You may come across a bug having the paddle on the right side of the lever, and the knob on the left. If further inspection reveals that the dot post is on the right side of the base, congratulations. You've found a left-handed model, a fine addition to your collection.
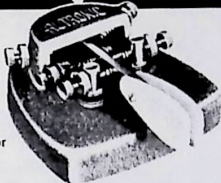
paddles

Radio Amateurs were building their own paddles for use with homebrew keyers in the 1940's. Commercial paddles arrived soon after. These single-lever paddles have separate connecting posts for the dot and dash contacts. The paddle simply closes one or the other contact to ground, and the keyer generates a string of dots or dashes.

Single-lever paddles like the Autronic, shown here (advertised during the 1960's), were followed by dual-lever paddles having separate dot and dash levers. At first, it was felt that separate paddles offered speed advantages in sending. By the 1960's, keyer design started to take advantage of the ability to have both paddles closed at the same time. This was called "squeeze keying," because if you had one paddle closed, you could squeeze the other paddle closed and insert a dot, for example, into a string of dashes.

Competing with squeeze keying was "iambic" code generation first described by Harry Gensler, Jr (K8OCO) in 1967. These keyers, which eventually displaced the squeeze keyers, generate alternating dots and dashes when both paddles are closed. Today, dual-lever paddles are commonly called "iambic paddles." In fact, Vibroplex named their first

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(1979) model the Iambic; this is the key shown in the photo below. Keep in mind that any dual-lever paddle may be called an iambic paddle, because it is the keyer, and not the key, that determines the form of code generated.
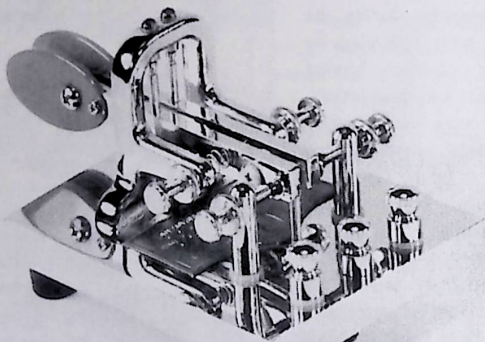
Both single-lever and dual-lever paddles are available today. While a dual-lever paddle and iambic keyer make high-speed operating less fatiguing, it takes practice to use them properly.

Many Amateurs who use a single-lever paddle don't operate at a speed that would make the change to a dual-lever paddle worth the effort. But if you like CW, and your goal is high-speed operating, the iambic system is the one to use.

the FYO keys

Joseph A. Hills, W8FYO, of Dayton, Ohio, seems to have had a long love affair with keys. In 1954 he offered his Vari-Speed, a swinging weight for quickly changing the speed of a bug. He was a tinkerer, though, and not a marketer; the Vari-Speed appeared in a single illustrated display ad, never to be seen again.

But the fifties was the decade of the bug's demise, and Hills apparently shifted his inventive talents to paddles. For more than a century, keys had a pivot shaft held in bearings. These required adjustment. The first paddles copied the vertical pivot arrangement of bugs. Hills decided that this was overly complex, and mounted the lever of his paddle on a ring resting on pins. The ring, rocking on the pins, was held against a plate by the tension of a spring. This required no adjustment, as any wear of the pins would be taken up by the spring.

The design was elegant, and on January 30, 1962, Hills filed a patent application (see page 25) and started production. Later that year, both CQ and QST reviewed the new "FYO" single-lever paddle. It was called "unusual," and was "sure to stir up a lot of interest among the brass pounders."

With reviews like that, accompanied by a photo of the key, who needed illustrated ads? In early 1963, Hills placed a small ad in CQ, followed by two consecutive ads in QST. He sold a few. And that was that.

Maybe Hills didn't like manufacturing or marketing. Whatever the reason, he was long gone by the time his patent issued in 1965. Maybe he decided to wait for the patent to issue, and then license others to make the FYO. If that's what happened, he had a long wait.

The next incarnation to appear was made by HAL Communications Corp. It was a dual-lever design made by splitting the ring into left and right halves. Called the FYO, it was produced for just two years, 1975 and 1976.

Others followed, none of which would be called an FYO, but all obviously based on the Hills design. Teletek offered their dual-lever TY-1

standard model and TY-1A deluxe model in 1975. Bencher started in 1977. HAMCO, having purchased HAL's inventory, rights and tooling, incorporated a unique magnetic tensioning system into their 1978 dual-lever Scotia, Trinidad and Carson models. And finally, arriving fashionably late as usual, Vibroplex bought up HAMCO and came out with their Scotia-like dual-lever Brass Racer in 1982.

There were undoubtedly others, but today only Bencher, with their several single and dual-lever models, and Vibroplex, with two Brass Racers, keep the FYO fire burning.
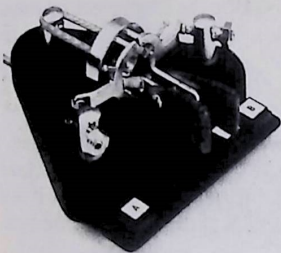
Shown above are the HAL FYO key and Hills' ad for his Vari-Speed. The Vari-Speed, probably very rare, would make a nice addition to a bug collection. The short production time of the HAL makes it a collectible addition to any paddle collection.

Concentrating in the FYO-style paddles would be an interesting specialty. They are the most modern of the keys. They are, compared to many collectible bugs, relatively inexpensive. Except for one, that is. It's only fitting that the most collectible of them all is the original FYO made by Joe Hills.

Come to think of it, maybe it wasn't an aversion to manufacturing or marketing. Some things are worth more than money. If it was a place in history Joe Hills wanted, the FYO key guaranteed him that.
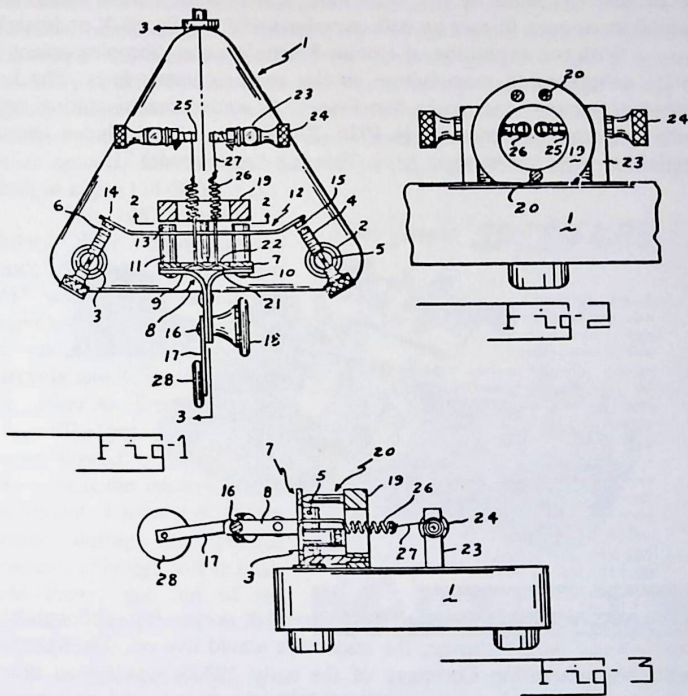
Patent drawings for Hills' FYO key.

Speed-X

There are some collectors who specialize in Logan keys, or look for all of the bugs made by E.F. Johnson. Others combine these makes and extend them even further by collecting keys with the Speed-X trademark.

With the expiration of Horace Martin's basic Vibroplex patent in 1921, others could manufacture similar semi-automatic keys. The Les Logan Company, located in San Francisco, started manufacturing keys with the Speed-X trademark in 1926. The Speed-X line included several models of bugs and straight keys. This is a Logan model 515.
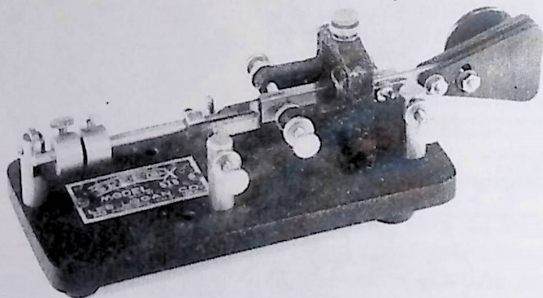
That was the beginning of Speed-X keys, but although the manufacturer would change, the trademark would live on. The Speed-X Radio Manufacturing Company of the early 1930's was Logan doing business under another name. After WWII, the Speed-X Manufacturing Company appeared offering the keys. This was Logan again; according to my information, all of the Speed-X keys up to this time are attributed to him. In any event, a major change occurred soon thereafter.

The E.F. Johnson Company acquired the tooling and the trademark in 1947. A manufacturer of electronic components, Johnson would take a major step into the amateur equipment market with its Viking line of transmitters. The company had prior experience with keys; it was one of the many manufacturers of the military J-37 during the war. The Speed-X trademark was well known, and its purchase gave Johnson a natural accessory to offer Radio Amateurs. The company made a large variety of Speed-X keys for twenty years. Concentrating in Johnson keys alone would result in a collection of over a dozen models. Including base and lever finish options, Johnson made at least six bugs (114-500 series) and eight straight keys (114-300 series).

This 1952 Johnson ad shows their top-of-the-line model 501 bug. With a base 3½" wide, it was the largest bug they offered, and carried ¼" contacts. The frame has a carrying handle reminiscent of the earlier McElroy bugs.

The post-war Amateur boom slowed in the 1960's, and with it the market. Many prominent companies disappeared during this period. Johnson, although still in business today, got out of the Amateur equipment market around 1967.

A few years later the Wm. M. Nye Company obtained the Viking and Speed-X trademarks from Johnson, and in 1975 the Speed-X keys again appeared. Gone, however, were the bugs, killed off by keyers and paddles. The only keys offered by Nye were straight keys; a squeeze key was later added to their line. The silver lining in this cloud is that they are still available today.

The next photo shows two Speed-X straight keys. The styles were offered by each of the manufacturers and are typical of straight keys offered by many others. These particular keys are (on the left) a Nye model 114-322-003 and (on the right) a Johnson model 114-310. Both keys can be found with other finishes and with or without the circuit closing switch; different model numbers accompany these variations.

Johnson and Nye each continued the model number designations of its predecessor, although Nye seems to have dropped the "114" prefix in recent years. The latest Speed-X straight key is Nye's "Master Key" (model 330-001). It is one of the few modern straight keys assembled on a base, and is popular because it doesn't have to be screwed to the operating desk or mounted on a home-made base. This key comes with a Navy knob. The base is a large, black-finished rectangle with the contacts hidden inside.

The history of the Speed-X keys spans more than sixty years. Of the few names associated with keys today, only that of Vibroplex has been around longer. If you're looking for a specialty with a tangled background and a lot of models to keep you occupied, you can't do much better than Speed-X.

And if that's to much for you, there are several sub-specialties. You could concentrate on one of the three manufacturers, or just on the Speed-X bugs, or the straight keys. Some narrow it even more, searching for the Johnson bugs, for example. Speed-X has something for everyone.

McElroy

Theodore R. "Ted" McElroy gained his reputation by winning telegraph speed contests. He won championships in 1922 and 1933. His ultimate achievement, the receiving record of 75.2 wpm set at the Asheville tournament on July 2, 1939, has never been matched.
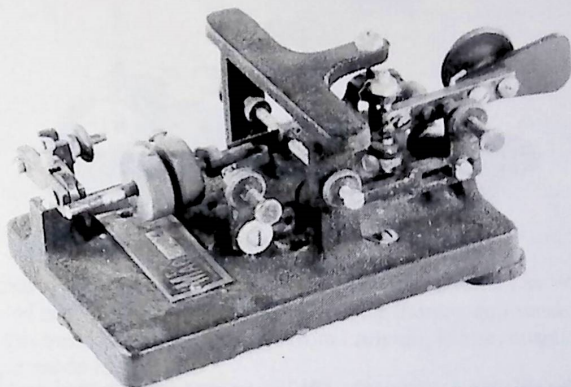

Doing business in Boston as T.R. McElroy, he began manufacturing keys in 1934. He started with the Mac-Key, shown above. This bug has a novel shape easily distinguishing it from the Vibroplex and Speed-X bugs of the time. The frame on these early bugs incorporated a T-shaped handle that allowed it to be tipped on the left side. With the pendulum locked, it could be worked like a straight key.

By 1937, McElroy offered the Mac-Key in Junior, Standard and Deluxe models. He denigrated the use of chrome plating on keys, saying

the reflections caused eyestrain, so the base of the Deluxe model had a simulated marble finish.

He couldn't ignore market demands, however. A later model bug, the Super Streamspeed PC-600, had a chromed base. This is probably the most desireable of McElroy's keys. It is instantly recognized by the teardrop-shaped base, rather like a clothes iron.
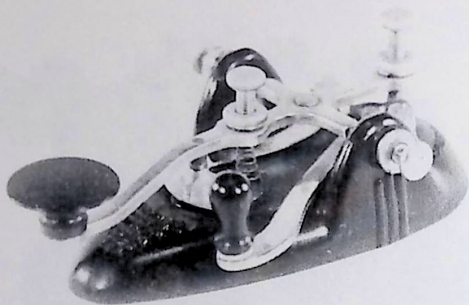
By this time (the early 1940's) he was incorporated as McElroy Manufacturing and was using style to set his keys apart from those of others. The unique shape of the PC-600 was replicated on his "Streamkey" straight keys in both metal and plastic (shown above) bases. The shape of the frames on McElroy bugs were of the one-piece Vibroplex style, but the vertical portion (rising to the upper pivot) on some models was curved like a horseshoe. Even where an earlier design was efficient and obvious, McElroy added his own touches.

If you're lucky enough to find a packing crate, it will complement your collection nicely. Shown next is a McElroy model P-500 and its original box.
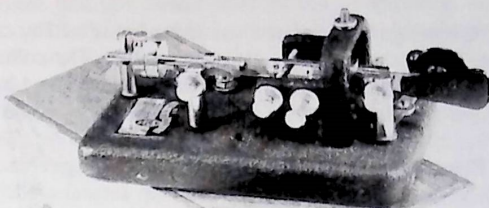
McElroy was busy making equipment for the war effort in WWII. This included perforators, code readers and Morse training equipment. He continued this business in his later years from Littleton, Massachusetts, but he no longer made keys.

McElroy died in 1963. In 1968, his son offered a "Ted McElroy professional model key." This straight key, similar to a baseless J-38 but chrome plated, has "McElroy Electronics Corp." stamped in the center of the lever. A good key in its own right, it marks the end of an era and belongs in a collection of McElroy keys.

The McElroy keys are made interesting and collectible by the man behind them and by their unusual designs. Because of the high level of interest in them, and the scarcity of some of the models, they can be comparatively expensive. To complete your collection at agreeable prices, you'll need perseverance and patience.

Brown Bros

One of the things that makes a particular brand of key collectible is that the manufacturer made many different models. The collector may concentrate on such a brand knowing that he will be challenged by the task of acquiring them all, and that there will be an interesting history behind them. This is the case with Brown Bros.

That's Brown Brothers Machine Company, always abbreviated in their ads as Brown Bros. Mach. Co. They offered several models of keys during a decade and a half.

Their first ad in 1964 (shown below) offered a basic line consisting of a straight key and a dual-lever paddle. They called the latter a twin lever, and I'll use that here, because it fits their letter-style model designation. In this system, U means unbased, B means based, and C means combination.

The UTL was the unbased twin lever paddle. The BTL was the twin lever on a base, and the CTL was a combination twin lever and straight key on a common base. The only model not properly fitting this system was the straight key on a base; this was called the ST.

The purchaser of the UTL had to provide his own base. This model was incorporated by homebrewers and manufacturers into their keyers.

I've saved the best part for last: There was also the CSA. You might guess that this meant combination...something. How about semi-automatic? That's right, a bug. Not just a bug, but the last new bug ever offered by any American company. This was combined with the straight key, both on the same base.

The CSA didn't last long. Everyone was switching to paddles by the 1960's. I dare say that only a few CSA's were sold, and that this model is as highly collectible as any other bug made since 1940.

Advertising for the other models seems to have stopped after 1970, and five years went by before Brown Bros was heard from again. An interesting development occurred during the quiet years. William F. Brown invented a twin lever paddle design that used leaf springs rather than pivots.

The CTL-A used the new twin lever and the old pivot-style straight key, but by late 1976, the new design was used on both of the two basic keys as shown in this ad. The twin lever and the straight key carried a -A designation, and the combination was the CTL-B.

The company was last heard from in 1979, but they left a legacy of interesting keys behind. If you want to collect Brown Bros keys, there are eight key-on-base models to look for. You may also want the two unbased twin levers.

Company brochures and a copy of the patent (no. 3,757,045) will round out your collection. And keep your eyes open for the cabinet-style "IC Keyer" by Palomar Engineers. Offered in the early 1970's, this keyer used the UTL mechanism for its built-in iambic paddle.

Vibroplex

The Vibroplex bugs have a popularity and fascination that others don't possess. I think this is because they trace their ancestry to the first bug, Horace Martin's Vibroplex, and because over the years they were sold in such quantity that they are available to potential collectors at a reasonable price.

The mechanical semi-automatic key was a terrific invention back in 1904, when Martin filed his patent. Prior to that, telegraphers used a straight key (also called a hand key) or a sideswiper. Also available was the Autoplex, a device which Martin patented in 1902. This sending instrument was worked like a bug, but relied on a battery and electromagnets to produce the dots.

Martin's goal in his work on semi-automatic keys was to eliminate the "terrible nervous strain" suffered by professional telegraph operators in working with the straight key. This wasn't mental strain, but muscular nerve exhaustion cause by making an average of 360,000 up-and-down movements on a straight key in a typical working day. It led to "telegrapher's paralysis," also known as glass arm. Thus afflicted, the operator would completely lose control over the key. Martin's aversion to the straight key explains why Vibroplex never made one.

As Martin said of his 1904 instrument, it "may be made more cheaply and is more simple in construction" than the Autoplex. The new design, said Martin, "produced an instrument pleasing in appearance and easy to operate." This first bug used a mechanical pendulum (or vibrator) rather than electromagnets and was marketed as the "Vibroplex."

In 1907, and again in 1923, Martin obtained patents on improvements to the Vibroplex. Finally, in 1940, the De Luxe model was offered, with the jeweled pivot bearings described in John La Hiff's patent issued the same year.
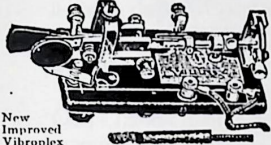
Between 1904 and 1948, The Vibroplex Company, Inc., introduced other models. There were at least three oddball designs; these are easily distinguished from the initial Vibroplex. The Two-lever of 1911 had separate dot and dash levers; the Model X of 1912 had a single contact

used for both dots and dashes; and the Upright, or Wire Chief's Key, of 1917 was a vertical bug that used the single-contact mechanism of the Model X. These keys, particularly the Upright and Two-lever, are quite scarce today.

There were also seven models based on the initial split-key-lever, two-contact design. These are the Vibroplex (later called the Improved Vibroplex, and then the Original), Blue Racer (No. 4), Lightning Bug (No. 6), Martin Junior, Champion, Zephyr and Presentation. (Today, the Presentation is cataloged as a "model," or variation, of the Original.) The ad shown below illustrates an Improved Vibroplex from the mid-1920's.

There are three or four ways to distinguish between the seven models of the basic Vibroplex bug. The Presentation is given away by the gold-plated brass plate on its base. The others differ in their base size (large or small), the type of damper support (there were four types), and the frame or pivot support style (one piece or assembled).

In all, I've listed ten models of the bugs, but if you want to collect every variety, you have quite a job ahead of you. The 1904 Vibroplex acquired mechanical improvements over the years. Bases came in black, gray, nickel plate and chrome plate. Even colored bases (red, green and blue) were offered in the early thirties. Many of the other models had similar changes and options. One collector has counted over 75 different variations of Vibroplex bugs.

Many of the older models have disappeared from the catalog, and no significant changes have been made to the Vibroplex bugs since the Presentation, with its adjustable mainspring (also contained in La Hiff's patent) appeared in the late 1940's. To remain competitive in the shrinking bug market of the fifties, the company added paddles to their line starting with the Vibro-Keyer in 1960, while continuing to offer bugs.

Three or four of the more common bugs would make a nice representative collection. Such an array must include the ubiquitous Original and the popular Lightning Bug, shown here.
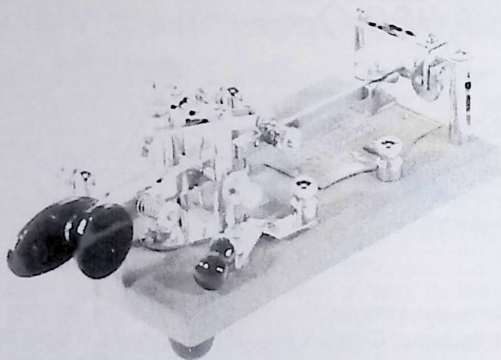
The Original is still available from Vibroplex (now located at 98 Elm Street, Portland, Maine 04101) in three variations: Standard, Deluxe and Presentation. Also available are all of the paddles: the Vibrokeyer (new spelling these days), the Iambic, and two Brass Racers. The latter, introduced in 1982, are FYO-style paddles. The Brass Racer Iambic is the basic model; the EK-1 has an electronic keyer built into the base.

military keys

Collecting military keys is an interesting specialty. A major consideration in any military engagement is communication, and telegraphy, being a simple and dependable mode, has always been important. Keys would be manufactured by the thousands during a war, only to flood the surplus markets afterward.

Military keys, unlike many commercial keys, have certain attributes that make them interesting. Their design directly reflects the environment in which they were used. Their military background gives them an inherent history. And most commercial considerations on their production were irrelevant; ruggedness and reliability was more important than cost.

Most of the military keys you will find today are from the WWII era. Many surplus houses sold the straight keys in the early fifties for under a dollar. Considering inflation, prices for the flea-market collector have risen hardly at all since then. Most of them are still readily available at modest prices.

The most collectible military keys seem to be the bugs. The Signal Corps called them all a J-36, and there were as many styles as there were manufacturers. The J-36's were little more than commercial bugs made by Vibroplex, Lionel and others and adopted by the military. They are popular with collectors for the same reason that commercial bugs are more popular than straight keys.

More interesting, I think, are the straight keys. These were made to military specifications, since the desired qualities were unavailable in civilian keys.

The most common military keys are the Army Signal Corps keys, and the most famous of these is the J-38. This was the key every Amateur Radio novice used in the fifties; any article on classic ham stations of that era will mention the J-38. This key, then, is a must for any WWII military key collection.

The J-38 is a typical telegraph key with circuit closer. It has a metal frame and is mounted on a dielectric base. The J-38 designation appears on the front of the base, directly under the lever. Depending on

the year and the contract under which it was made, there are some variations. The two most common styles are the black frame with solid bottom, and the unfinished frame with open bottom. The photograph below shows the latter style.


Today, the J-37 seems to be easier to find. This designation is molded into the top of the frame to the left of the lever. The design uses a leaf spring, rather than the coil spring found on the J-38 and most other telegraph keys. The frame is a dielectric material, and the key does not have a circuit closer. A J-37 is illustrated on the next page.

Rather than holes in the frame through which screws are inserted from above (like the J-38), the J-37 has captive nuts molded into its frame. The mounting screws are inserted from below, through the operating desk or a base into the frame.

You will find this key both with and without a base. But unlike the J-38 that came on one basic style of base, the J-37 may be found on an interesting assortment of bases. Each key/base combination will have its

own nomenclature, such as J-45 or J-48A. Here again, it is a challenge to collect all of the varieties.

As you see, the Army "J" designation indicates the device is a telegraph key. Keep this in mind, because a few of the keys are so unusual you may not recognize them immediately as keys. The J-51, for example, is a simple hand-held squeeze switch used for light signalling.
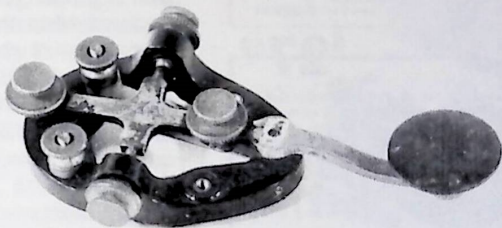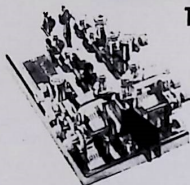

There are many other keys that were used by the various branches of the U.S. Military that you may come across. All of them were available on the surplus market at one time or another; for this reason, and because of the higher interest in bugs, the military straight keys are not highly collectible. But if you start collecting them, you will probably expand into German, Japanese and other foreign military keys. These, of course, are more difficult to obtain in the States.

All keys have a background that should be learned by the collector; this is particularly true of military keys. Collecting and learning about them can be a fascinating lesson in modern military history.

I've mentioned the Brown Bros CSA, and suggested that it's quite collectible. Here are three more scarce bugs. They are modern in the sense that they were available after WWII. That, of course, was their downfall; they were introduced when thoughts were turning toward electronic keyers and away from bugs. This contributed to their scarcity, but their desirability is increased by their unusual designs.

The Valiant was offered by Melvin E. Hanson, W6MFY, in the early and late 1940's through the Melehan Radio Products Co. "Melehan," of course, is an acronym. Production was probably suspended during WWII due to the lack of commercial supplies of chrome.

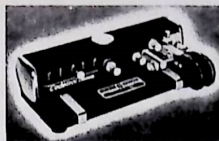Apart from its scarcity, the Valiant is doubly collectible for being a dual-pendulum bug. If the term "bug" means a semi-automatic key, the Valiant is not, strictly speaking, a bug. Both dots and dashes are made automatically by their individual pendulums.

Bernard Breedlove offered us the Codetrol in 1951. This has a right-angle mechanism similar to several earlier designs including the Australian Simplex-Auto. It is said that only twenty Codetrols were made. Collectible, indeed.

A bug having a rotatable frame was patented in the late 1940's by Lawrence Dow, the patent being assigned to the Dow-Key Company of Winnipeg, Manitoba. In the early 1950's the Dow-Key Company of Warren, Michigan, advertised it to Amateurs. The idea is that the key-lever can be rotated to a position of maximum comfort and least stress. Unlike Hanson and Breedlove, Dow-Key made other models; this was their last, and the one everyone wants. The company name survives today as a division of the Kilovac Corporation.

These bugs demonstrate that you don't have to go back to the early part of the century in your search for rare keys. They're still out there, so keep your eyes open.
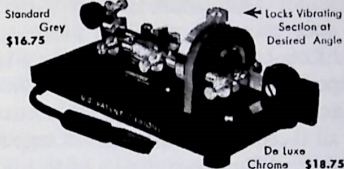
what to collect

This book is mainly for the beginning key collector, so let me assume that you're just getting into the hobby. You might have one or two keys, and you're interested in putting together a nice collection. There are several types, hundreds of makes, and thousands of models available to you. Will you try to acquire them all?

I hope not. Like collecting anything else, it's much more interesting if you impose some limits. This gives your collection some coherence. Do otherwise, and you'll be like the junkman who points to his auto salvage yard and says, "That's my car collection." Different makes, years, models and styles are all mixed in, and the effect is lost in the mass of objects.

I quoted M.C. Tsen in the introduction, and I'd like to quote him once more. In speaking of collecting old military equipment, he said, "You have to set yourself a certain geographic area and a certain time period.... I think that's one of the major faults of the flea market type of collectors. They know a lot of buzzwords, but they really don't know how all these buzzwords connect together."

The rough limits of this book are post-1930 U.S. keys; you may choose others, and may also limit yourself to certain makes or models. And while there's nothing wrong with searching flea markets, I'm sure you've met the type of person Tsen describes. His use of the buzzwords is only exceeded by his essential ignorance of the keys he owns.

There should be a reason for your collection, a reason that demonstrates a point. The point may be simply that you like keys. But ask yourself, what is it you like about them? Is it the technical elegance of a semi-automatic key? If so, you might limit your collection to bugs.

Do you admire the perseverance and inventiveness of Horace Martin? Then put your efforts into a Vibroplex collection.

Or maybe you find the history of Speed-X keys interesting. In that case, you'll want to collect Logan, Johnson and Nye.

In each of these examples, the reason for the collection arises out of the background and history of what is collected. It may be the design of the key, the person behind it, or a company whose history interests you.

Here are a few more examples of collections limited in scope, but not enjoyment:

Go-Devil bugs...made by several companies.
Johnson keys...do you use a Viking Ranger?
Paddles...the latest innovation
Straight keys...less expensive than bugs.
McElroy keys...made by the code speed record holder.

I'm sure you can think of many more, but you only need to find one that interests you. Your decision doesn't have to be made right away. When you start collecting, you will probably find all the keys interesting. But by the time you have ten or fifteen, you'll probably find yourself admiring a few of them more than the others.

The decision to concentrate in a particular area (or two or three areas) may arise from the keys, or out of financial or space considerations. However you arrive at it, your collection will begin to have a focus, and you're on your way to becoming an expert in that area.

I'm not suggesting that from that point on you avoid all keys that don't fit your specialty. Trading with other collectors helps them and the hobby, and is a good way for you to get those keys that don't show up at flea markets. To do that you'll need some swap material. You may also want to have a few representative examples of other keys and types in your own collection. So if you find a nice key for an inexpensive price, consider buying it.

Don't overlook new keys, those available today from the manufacturer. The FYO paddle was new in 1962, and there are many collectors today wishing they had bought one then. Bencher, Vibroplex and Nye still make keys.

You might even want to concentrate on NIB (new in box) keys, whether brand new and fresh from the factory or NOS (new old stock; old keys from manufacturer's or dealer's stock never previously sold at retail). You certainly won't find used ones in better condition. And keep in mind that we once thought Joe Hills would be selling his FYO forever.

what else to collect

Ignore popular trends. A collection that reflects your own interests will be more enjoyable, and give you incentive to study the history of the keys, technology and companies involved.

For those drawn to wire equipment, here's a sampling: A Manhattan Electric Supply Company sounder and a 1930's Signal Electric Manufacturing Company "signal learner" KOB (key on base) set.
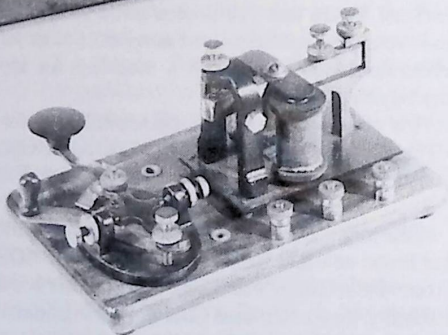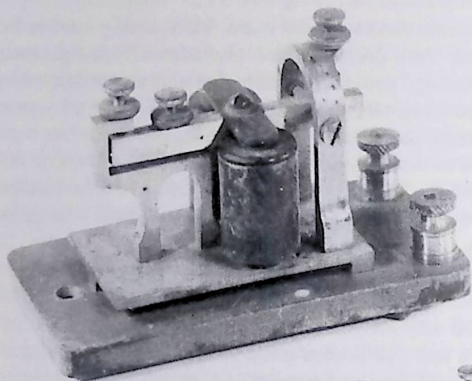
where to find them

You've decided you want to collect keys, and you're not sure where to look for them. Well, like the old prospectors said about gold, keys are where you find them. Think of the people who would have them, and seek them out where they congregate.

Amateur Radio Operators are a first thought. At the time this is written (there's change in the air), every one of them had to practice with a key to get his license. Many of us use them on the air, and some of us prefer CW to phone operation. Hams have their clubs, magazines and flea markets (also called hamfests and swap meets, although not much swapping goes on at them). Get to know a few hams, particularly those who collect keys. Find out when and where the flea markets are held, and go to them. This is the richest hunting ground.

Collectors of old radios often dabble in or come across telegraph equipment. Find someone who's into this hobby, and check out their flea markets. You might get interested in the old telegraph sounders and such; they're nice to display with your old keys.

Who else? What about railroad fanatics? Not likely, you think? Don't be too sure. Many of their meets include a flea market, where all sorts of railroadiana is offered. And how did those old railroad stations communicate? Right, by telegraph. Railfans come in two types: the railroad equipment and history buffs, and the model railroaders. Since the distinction is not sharply defined, both groups offer opportunities to the key collector. The former will have railroadiana collector's shows and the latter, model train shows. Look for local club meets and national meets, like those of the NMRA. Even if you don't find an old key, it'll be fun. Bring the kids, if you've got 'em. They'll have a ball.

What about the MVCCA? That's the Military Vehicle Collector's Club of America. Go to their local shows and check out the tanks and half-tracks. While you're there, visit the flea market area and look over all the old WWII camo outfits and radio equipment. Radios? Maybe some keys here. Sure enough, I picked up a nice KY-116/U (AN nomenclature for a J-37 with leg clamp) at the last one I went to.

Don't overlook any flea market or yard sale, even if not related to the above. You never know where or when a key will show up.

Finally, spread the word around to your relatives and friends. You'd be surprised how many people have, or know someone who has, a key or two. These things sit in cellars or attics for years, all but forgotten until someone like you mentions them.

The ham flea markets are the best place to look. You'll usually find more keys there than anywhere else. But unless you're prepared to spend the whole day there, you have a decision to make.

You could get there early. That's when you'll find the best keys still available. Arrive later, and it will have been sold. Because it's early, you won't be able to dicker much. If it's what you want, you'll have to pay the asking price. (But just walk away from anything that's over-priced. You'll find others.)

Or you can get there late. The sellers are looking at all their parts still on the table. They lugged it in that morning, and they don't want to lug it home. They've already marked the prices down, and they're still prepared to knock more off. Haggle; prices will fall. But this isn't the cream of the crop. That Johnson bug may be missing its knobs; a Vibroplex Original might have a damaged pivot.

My suggestion? Unless you are looking for parts keys (and you shouldn't be, if you're just getting started), get there early. Buy the best and pay the price, if it's reasonable. In the long run, it's worth it. How early? When the sellers are unpacking. Get first crack at the goodies.

Often, sellers are admitted earlier than buyers. If there's no, or very little, difference between the seller's table charge and the buyer's admission, go in as a seller. Bring a box of radio junk (oops, I mean spare parts and antiques). Set it up, and go looking.

You will see that some sellers leave their stuff out, with an "honor box" for the money. At outdoor markets, where they park next to their table, they leave the car window open a crack with a "put money here" sign. They're off looking, too. If you're lucky, you'll sell enough to pay for the keys you buy.

I mentioned magazines. The best ones I've found are the ham radio, old radio and telegraph publications (to classify them roughly). You want the ones with a lot of classified ads, and although most of the ads are for keys wanted, some are for keys for sale. You might want to place your own ad (free to subscribers, in the first three mentioned below).

Buying a key from an ad is tough. You're buying sight unseen (although most sellers will offer to accept return if you're dissatisfied) and as for prices, you can often do better at a flea market. That is, if you can find the key you want there.

Here's a list of a few magazines. Most of the ham magazines are available at newsstands. For the others, write to the publisher for subscription information, and ask for a sample copy. You might find one or two you enjoy so much, you'll subscribe.

Antique Radio Classified
P.O. Box 2, Carlisle, MA 01741

Electric Radio
Box 139, Durango, CO 81302

Old Timer's Bulletin
Antique Wireless Association
Box "E", Breesport, NY 14816

CQ Amateur Radio
76 North Broadway, Hicksville, NY 11801

QST
American Radio Relay League
225 Main Street, Newington, CT 06111

There are others, including those in the railroad and military vehicle hobbies, but these will get you started. If you write to any of them, I'd appreciate it if you mention you were referred to them by this book.

checking them out

You're standing at a flea market table with a crowd pressing at your back, and you spot a key. It looks clean, and it's a model you've been searching for. You grab the key and try to catch the seller's eye.

Hold it!

Have you really looked that key over? I know you're in a hurry to buy it before someone else becomes interested, but you only looked at it briefly. Better to examine it carefully now, rather than get it home and discover it has problems.

Any straight key, paddle or bug can look fine with a quick glance, but if you're considering buying it, give it a careful inspection. Granted that the finish is in good condition, since that's what caught your eye, parts can still be missing, broken or replaced with incorrect parts.
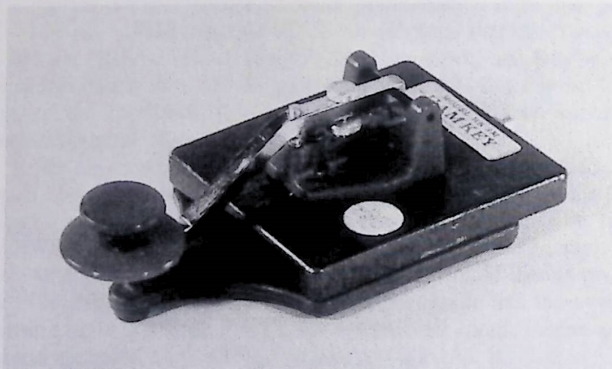

To examine a key for defects, you first have to know what a perfect example looks like. If you've never seen the particular model before, it will be similar to others of the type. Look at every part carefully, particularly those that are adjustable or removable. These are the parts that are usually missing or damaged. Study the ads and photos in magazines,

examine new keys at a ham radio store, and talk to knowledgeable collectors who may be set up at flea markets.

Don't take it for granted, however, that every old key in a collection or a photo will be original. If it was found with parts missing, replacements may not be identical to the originals. Knobs are especially prone to replacement. Spotting damage is a little easier. The photos show three examples of keys with problems.

The Ham-Key (opposite, model HK-3M) looks good, but there seems to be something missing on the tension (spring) adjusting screw. It looks more like a set-screw than a standard adjusting screw with locknut. Is this original? Close study shows that the screw is broken, so cleanly you might think it was made that way. The locknut was apparently tightened too much, and the screw snapped at the lever. These keys are commonly available in perfect condition, so there's no reason to buy this one.
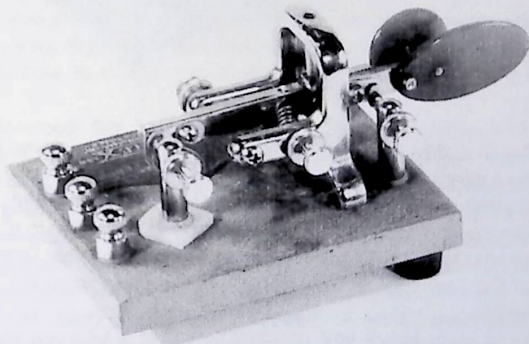
The problem on this Vibroplex Vibro-Keyer is given away by the plastic riser placed under the dot post. Why did the dot post need to be

raised? Checking the frame, we see that the red plastic plug that should cover the top pivot screw isn't there. A closer look discloses the real problem: The upper screw is missing, the lower has been replaced with an ordinary machine screw. At a low price, it may be worth fixing.
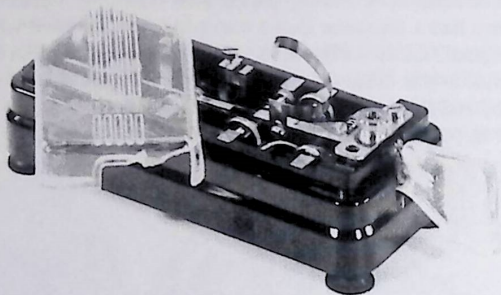
This Skillman bug has several problems. The top cover is cracked. The paddle looks a bit rough; comparison with a perfect model (see page 55) reveals that the original black plastic paddle has been replaced with a clear home-made piece. Inside we see that, in addition to a couple of missing screws, the plastic key-lever is broken. Not visible in the photo is that one of the four rubber feet is missing. This is a parts bug. Since it's an inexpensive and widely available model, pass it up.

The time to be careful is when you find a key you really want. Suppress your excitement, and check the key carefully. As you gain experience and become familiar with certain types or models, it may only take a quick look to determine the condition of a key that interests you. Until then, proceed with caution.

what to pay

So you want to start looking for a few keys, and wonder if it's an expensive hobby? Yes, and no. Yes, if you're inexperienced and assume every seller's asking price is reasonable. No, if you look around and talk to collectors before reaching for your wallet. Let me give you an example.

I was set up at a flea market and had a few Vibroplex bugs on not-for-sale display. A gentleman looked them over and asked, "What do these things go for?" Before I could open my mouth, he added, "About $250?"

Heaven help me! I'd be collecting stamps if bugs were so expensive. That fellow might have been happy to pay $100 for a Champion, but only until he came across a similar one for $30.

Experienced collectors know what they're willing to spend for a particular key, and that if today's seller won't settle on a reasonable price, tomorrow's will. My advice to the beginner is to first get educated. Look through the flea markets and classified ads, and don't buy anything until you know the values.

But you want get out there now and start buying keys, and there's no stopping you. So I'll tell you what to look for, and what to pay. Better, I'll tell you how to become an expert on prices by following two easy rules.

First, look for keys in excellent condition. Absolutely ignore common keys in only fair, or worse, condition. Haggle and dicker. Pay as little as possible, but not more than thirty or forty dollars for a nice bug or paddle. Limit yourself to ten or fifteen dollars for straight keys.

Even with these limits, you have to be cautious; many straight keys aren't worth even ten bucks. In any event, you'll find yourself passing on many keys, and when you're just learning, that's the point.

Second, keep a notebook of models, conditions and asking prices of every key you see, even if it's one you don't want. Talk to the seller to learn something about the key, like who made it, what model it is, and when it was made. This step is more important than actually buying a key.

You think this is a tough assignment, and that it will take some time before you've acquired even three or four keys. It may, but by the

time you've found them, you'll have learned something about keys, and found that asking prices can vary widely. More important, you'll have learned what interests you, and what you want to collect.

Later, after you've gained experience, you may want to pay more than the limits I've given for a particular key. But by then you'll know whether the price is a fair one.

Here are a few keys I've bought within the last six months at flea markets and from individuals in New England; all were in excellent condition. The first three are straight keys, the last three are bugs.

Signal Corps J-37	$ 5.
Navy 26003A flameproof	7.
Signal Electric, rect. base	10.
Vibroplex Champion, with case	30.
Vibroplex Lightning Bug	35.
Skillman bug	12.

Personal preference plays a large part in key values. An old Logan may be worth much more to a Speed-X collector than I'd be willing to pay. If he and I were the only bidders for it at an auction, he'd get it. That's fine; he'll be happy with the Logan, and I'll be happy saving my money for a nice Blue Racer.

It is said that prices can vary depending on where you live. But just because a model is scarce in Arizona doesn't justify a higher price than is asked in New England, where it might be common. There's no reason for it, particularly when collectors in different areas can buy, sell and swap keys using the telephone and the mail. I think we'll see a narrowing of regional price differences in the future.

The suggestion that where keys are scarce, prices will be higher also applies to the type of meet or flea market you attend in your area. "Western Union type" keys displayed proudly at railroad collector meets may be at the bottom of the junk boxes at an antique radio flea market. But looking is free, and you might find what you want.

If you're interested in the early telegraph and spark keys, be careful about purchasing until you have some knowledge of their values. Age alone does not always mean a key is worth a high price. Many of the late 1800's steel-lever telegraph keys can be found for less than the price of a 1950's Johnson Speed-X straight key.

If you want to collect on a limited budget, there are lots of later low-priced keys available. For example, in the 1960's and 70's, there were numerous paddle manufacturers; today, almost all of them have disappeared. While many bugs will exceed that $40 limit, very few paddles will. This may not last long; although most collectors today concentrate on straight keys or bugs, some are beginning to recognize that paddles are just as interesting.

You may think the limits I've given are too high, and that it's not an inexpensive hobby when you pay forty dollars for a bug. While those are fair prices for nice models (in my opinion, that is), let's say you really don't want to spend that much.

All right, let's see what you might do at the lowest end of the scale. Set your limit at five dollars, tops. You're not going after the good stuff here, although you're willing to be pleasantly surprised. You're looking for common keys that were inexpensive to start with. You'll work with asking prices up to ten dollars or so, and try to haggle down to your upper limit.

What's available? Let's start with the cheap Japanese models, like the Radio Shack "Skillman High Speed" or the identical Lafayette "Brass Pounder" offered in the 1950's and 60's. It is still available today as model F21-338 from Fen-Tone, and as Ameco's K-4. This imported straight key looks impressive with its ball-bearing pivot supports, but it's strictly a beginner's key. A new one is ten dollars.

Then there was the ultra-cheap plastic-base "Skillman Jr" (also previously carried by Lafayette and E.F. Johnson, but not honored with a name); today's model K-1 from Ameco is similar and goes for six dollars.

Both of these keys, shown on the next page, can be found at flea markets in this low-end price range. Since new ones are so inexpensive, don't settle for a used one in less than excellent condition.
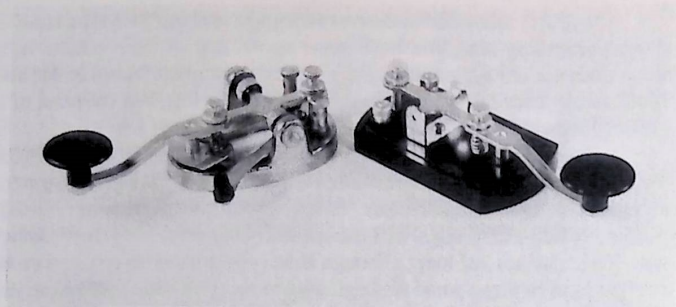
Military keys are common. These were dumped on the market by the barrel-load after WWII. The J-37 seems especially plentiful, in several base variations. You should be able to find a perfect one, perhaps without a base, in this price range. Prices at military collector meets may be lower than at hamfests.

Old telegraph straight keys are plentiful under five dollars. It seems like millions were made by Bunnell, Signal Electric Manufacturing Co. and others between 1881 and 1930. Many early ones are interesting leg keys. You will find some on home-made bases (the original wood base having been lost or damaged years ago) or absent a base. Often, the spring is missing, but that's minor. You can pick them up for anywhere from fifty cents to a couple of dollars. These keys turn up at antique radio swap meets more often than at hamfests.

You may have to accept other models in less than top condition, the keys that others have passed up. But there's an advantage here: You can sleep later, and get to the flea market after it opens.

You will find few bugs for five dollars or less. You may find a decent "Skillman" bug if you'll stretch your limit to ten or twelve dollars. This was a Japanese import (Hi-Mound model BK-100) sold by both Lafayette and Radio Shack in the late 1950's and early 1960's. Some have "Skillman" marked on the cover, while others don't. Look for this

common and inexpensive bug in perfect condition; as with any key, it's nice to find one in the original box, like the one shown here.
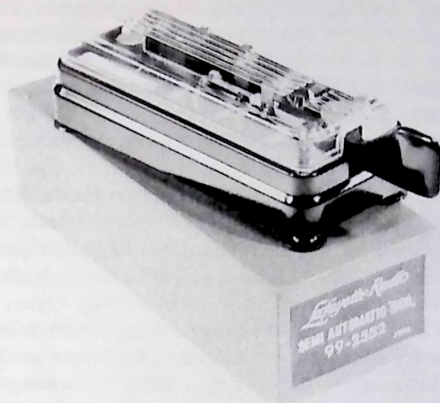
Other bugs this cheap will be parts bugs. I ordinarily don't recommend buying them, but if you must have a bug, and that's your limit, go for it. If the missing parts (knobs, wire nuts) don't affect its operation, you can replace them, and use it. Hamfests are the best place to find these. And buying one gives you a reason to hit the next flea market: You need another one to get the missing parts.

Since you're working in this price range, turn it to your advantage. Pick up any cheap, off-brand parts bugs you come across. (Don't bother with the common Vibroplex models; good examples are too plentiful.) You may find you can trade some of them to a collector who needs the parts, and get a decent, common key in return.

Finally, no one can tell you what a key is worth; only you can answer that question. Whatever limits you set, try to start by following the two rules, and be patient. You'll soon know what your next key will cost you even before you head for the flea market.

changes

Easier. Faster. The development of the key has been driven by these two words. From the straight key, to the sideswiper, to the bug, each advance reduced the effort and increased the speed of the operator.

Changes in the art of transmitter control should interest key collectors, because they are what make certain keys scarce or obsolete. Martin's invention of the bug doomed the sideswiper, but it gave us all kinds of bugs to collect. Let's look at the latest revolutionary change, the development of the electronic keyer.

By the late 1930's the bug was simply a mechanical device in an electrical world. H.F. Mason gave us the motor-driven "Moto-Key" in 1939, followed by W.R. Starkin's motorized "Equable" in 1942.

But these were merely electrical, in increasingly electronic times. By the early 1940's, Radio Amateurs were building keyers using vacuum tubes. The war interrupted further progress, but the direction to the future was pointed out by Electric Eye Equipment Company in 1948. That was when they introduced the "Mon-Key", the first commercial electronic keyer. Eldico of New York presented a keyer in 1950, and the race was on.

The paddles on these first two keyers were built in, or attached to, the keyers, but it wasn't long before single-lever and dual-lever paddles were flooding the market. Transistors soon made tube keyers obsolete, only to be replaced themselves in the early 1970's when Curtis came out with their "keyer on a chip." The Curtis 8043 IC found its way into many homebrew and commercial keyers; today the 8044 chip can be found inside the EK-1 paddle by Vibroplex.

These advances gave us many paddles to collect, but struck a mortal blow to all but one of the bug manufacturers. Apart from the Vibroplex bugs, only straight keys and paddles are available from manufacturers today.

Will straight keys always be with us, to be used for practice and slow-speed sending? Don't be too sure. In 1979, David Kaufman, WA3WBI, did a study in which he found that more than half of those who

switched from a straight key to an electronic key did not feel the straight key experience was of benefit. He concluded that there is a discernable superiority in the code sent by electronic keyer users, and stated his belief that one should start right out with a keyer rather than a straight key.

Sideswipers are gone, as are almost all of the bugs. Will the straight key follow? Only one manufacturer, Nye, makes them today. And what of the pivot-shaft paddles, now that the FYO style is so popular? Or the single-lever paddle? Will even the spring-tensioned FYO yield to the magnetically-tensioned design?

Finally, will the purely mechanical paddle become entirely obsolete, with only paddle-keyers like the EK-1 offered commercially? Should we start collecting those now?

"Get 'em while they're hot," shouts the hot-dog vendor at the ball game. Good advice, too, for the key collector. If you like the keys made today, don't wait until tomorrow to buy them.

names

This is a list of many of the names you will come across while collecting keys. Most are of manufacturers (like Logan); others are of trademarks of keys (like Speed-X). Some model names are also included.

These are mainly modern names, from the 1920's forward, of keys manufactured or marketed in the United States. Since your search will be in today's flea markets, I have not attempted to include the old or rare names such as Boulter or Mecograph.

Apex
Autronic (Electrophysics Corp.)
Bencher
Brown Bros.
Bunnell (J.H. Bunnell & Co.)
Bunnell-Martin
Codetrol
Cricket (F.F. Mace)
Dow-Key
Electric Specialty Mfg. Co.
Electro
El-Key
FYO (Hills, HAL)
Go-Devil (several mfgrs)
Gold Bug (Bunnell)
HAL Comm. Corp. (FYO)
HAMCO
Ham-Key (Ham Radio Center)
Hanson, Melvin E. (Valiant)
Hills, Joseph A. (FYO)
Johnson, E.F. (Speed-X)
Kenco
Logan, Les (Speed-X)

Mac-Key (T.R. McElroy)
Magnamatic
Manhattan Electric Supply Co.
Martin, Horace G.
Matric
McElroy, T.R. (Mac-Key)
Melehan (Valiant, see Hanson)
MESCO (see Manhattan)
Nikey
Nye, Wm. M. (Viking Speed-X)
Permaflex
Quik-Key
Signal Electric Mfg. Co.
Skillman (Radio Shack, Lafayette)
Speed-X (Logan, Johnson, Nye)
Telegraph Apparatus Co.
Teletek
Ten Tec
Trac-Key
Ultimate
Valiant (Melehan)
Vibroplex
Viking (Johnson; Nye)

code speed

Since many key collectors are Amateur Radio Operators, and use the keys that they collect, a discussion of code speed may be of interest.

Two types of code have been mentioned, American Morse and Continental (International Morse). There are, however, other languages and other codes, such as those for Russian and Arabic. But Continental is the language of international radiotelegraphy.

So we all use the same code on the air, but whenever a group of brass-pounders get together, it's like a bunch of car enthusiasts at a race track. How fast will it go? asks one group. How fast can you copy? asks the other.

You will see code speed mentioned in words per minute (wpm). This is based on the length of an average English word, and works out to a five-letter word of fifty bauds (including the space following the word). A baud can be thought of as a basic time-unit, where a dot and the space between code elements within a letter are one unit in length, a dash and the space between letters in a word are three units, and the space following the word is seven units long.

When Radio Amateurs speak of code speed, or copy a bulletin or code practice from W1AW, this is the standard that's implied, and the standard word is PARIS.

If you tune in to a military station and find you can't copy their announced speed, when it seemed so easy from W1AW, don't despair. Their standard is based not on plain text but on five-letter code groups, which average 60 bauds. The standard word is CODEZ (or CODEX). A military speed of 30 wpm would be 36 wpm under the PARIS standard.

You probably use a keyer that has an uncalibrated speed control. If you want to determine the PARIS speed at a particular setting, simply multiply 4.8 times the number of dashes per second. Fairly close, and a little easier, is to just count the number of dashes in five seconds; that's the speed in words per minute.

"Copying" code doesn't simply mean listening to it and understanding it, it means transcribing it. The standard Amateur and Radiotelegraph

Operator tests require one minute of solid, or perfect, copy. Up to a certain speed, this is easily done with pencil and paper. Beyond that, perhaps above 30 wpm, it requires a mill (typewriter). In addition to reading high-speed code, this also requires the ability to touch-type.

Candler System Courses Give You Speed

Back in the 1930's a fast operator was a "high speed bug merchant." The term is out of date with today's paddles and keyers, but you'd certainly have to be a proficient typist to copy 40, 50 or more wpm. The type of mill most easily used for code transcription is upper-case only; no shifting is required. If you're interested, these are sometimes found quite inexpensively on the surplus market.

For over three decades, Walter Candler offered his Candler System courses on learning the code and typing. His most renowned advocate was Ted McElroy, who appeared in many of the ads. Candler himself, however, was a former code speed champion.

The two parted company on the 1940's, when McElroy produced his own code training system.

Trying to increase your speed, and wonder what the upper limit is? McElroy may have answered that with his still-unbeaten record set in 1939. He copied 75.2 wpm. So when you're asked how fast you can copy, just say there's plenty of room for improvement.

references

While much of the information in this book comes from my own collecting experience and study of early ads, only so much can be learned this way. Other people have given their time and effort to making their knowledge available to key collectors and students of telegraphy; this book would lack much information of interest if their articles had not been available. I thank them all. Space does not permit mention of every source that contributed to this book, and some articles read long ago have been forgotten, although the information they contained may have been remembered and reported in these pages. But here are some of them. Any errors in this book are mine alone, and should not be attributed to other writers.

Quotations from M.C. Tsen are from an article in an August 1989 issue of the <u>Beacon</u>, a newspaper published in Acton, Mass.

E.A. Marland's 1964 book, <u>Early Electrical Communication</u>, published by Abelard-Schuman Ltd, was a major source of information on the work of Morse and Vail.

Information on early Amateur CW history was found in the Amateur publications, particularly <u>QST</u> for Dec 1927, Dec 1940, and April and June 1964, and <u>73</u> for September 1979.

<u>The Zenith Transoceanic</u> by Bob Moore (pub. 1990) is distributed by Bob's Books, Box 27232, Denver CO 80227.

<u>The Old Timer's Bulletin</u>, Journal of the Antique Wireless Association, contains a Key and Telegraph column edited by Lou Moreau, W3WRE, that is always informative. The March 1982 (Vol. 22 No. 4) and February 1990 (Vol. 30 No. 4) columns were the principal sources for dating keys by their design and style.

Iambic keying was first described in an article entitled "Iambimatic Concept" by Harry Gensler, Jr, K8OCO, in <u>QST</u> for January 1967. He used the word "iambic" in a footnote.

The section on Vibroplex keys originally appeared as an article by the author in the March 1990 issue of Electric Radio, and was edited and revised for this book.

The illustrated treatise on Foreign and Military Telegraph Keys by Louise R. Moreau, W3WRE, and Murray D. Willer, VE3FRX, contained in the A.W.A. Review, Vol. 3 (1988), published by the Antique Wireless Association, provided much information, and should be read by every collector.

Dave Ingram, K4TWJ, writes the World of Ideas column for CQ Amateur Radio magazine; his illustrated two-part story on the K5RW key collection/museum in the May and June 1985 issues contains a wealth of data. Dave's book Golden Classics of Yesteryear, published by MFJ Manufacturing Co. (1988), also has an interesting chapter on keys.

Antique Radio Classified used to have a column called Telegraph Key Review contributed by Gil Schlehman, K9WDY. The photographs and descriptions of early and unusual keys were always enlightening.

The survey by David Kaufman, WA3WBI, on straight keys versus keyers appeared in CQ Amateur Radio for July 1979.

Information on code speed standards was found in an article by Gaspard Lizée, VE2ZK, in the April 1973 issue of Ham Radio.

Iambi...what? Gensler's coined word in late 1967 ad.

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index to illustrations

postscript

Reading this book won't make you an expert on keys; only further study and experience can do that, and perhaps only in one or two makes.

Then how, you may ask, did I become an expert on all the keys in this book? Well, first of all, I'm not. There are collectors out there who know more about some makes or models than I ever will. On the other hand, I don't know anyone who knows everything about all keys. Each of us holds a piece of the puzzle.

Which brings up a second point: None of us learn in a vacuum. We depend on those who have the time to write articles and columns to inform the rest of us. I direct you to the References section for a short list of my mentors. Some day you may teach the most experienced of today's collectors, even if it's only with a new fact revealed in a letter to an editor, or a photograph of an unusual key contributed to another's column. Every piece helps complete the picture.

This book contains many facts, but some of them are necessarily based on incomplete information or secondary sources, so feel free to question or disagree. If you can cite an original source to the contrary, I would appreciate hearing from you. Like you, I am still learning. My intention is not to be dogmatic, but to offer what information I have in the hope it will be helpful to readers in their hobby.

I am always interested in adding to my collection of information on keys. Photographs of old, unusual or collectible keys, or copies of company catalogs or early advertisements, are always welcome. Write to me c/o Artifax Books. I'll assume that what you send may be published to benefit all collectors (with credit to you, of course, for providing it). Before sending original materials that you want returned, write first to make arrangements.

Good luck and 73,

Tom W1IMQ

In addition to the dozens of keys illustrated, both beginning and advanced key collectors will find helpful tips, hints, facts and advice in this **introduction to key collecting**. Here's just a sampling of the contents:

- Dating keys
- Learning values
- The rare Brown Bros CSA
- Building a collection
- The Speed-X companies
- Avoiding damaged keys
- Why you should consider paddles
- T.R. McElroy's Mac-Keys
- Three scarce, unusual modern bugs
- Where to find keys
- Joe Hill's great invention

… and much, much more. This is your guide to increasing your knowledge and enjoyment of the hobby, and acquiring a collection you can display with pride.